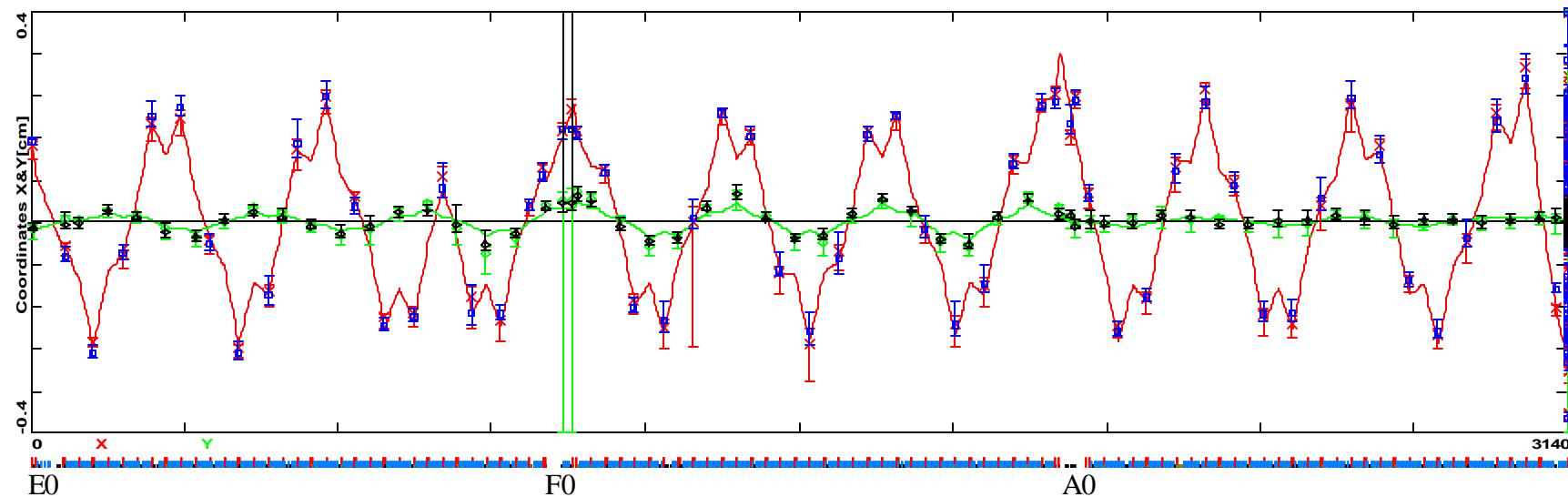


Results of Tevatron optics measurements

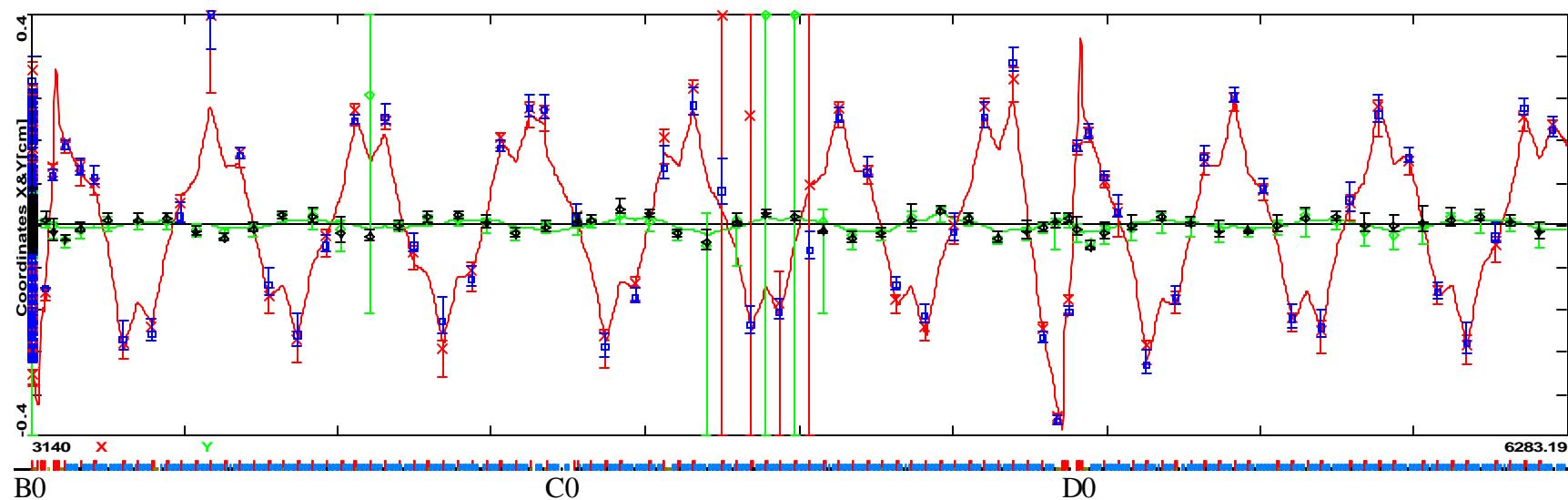
150 GeV, central orbit, data were taken at Feb.20. 2003

X1: HE42 = 50 mrad

Wed Mar 12 09:40:52 2003 OptiM - MAIN: - D:\Optics\Tevatron\Tevatron\Aimin\TevI02.opt

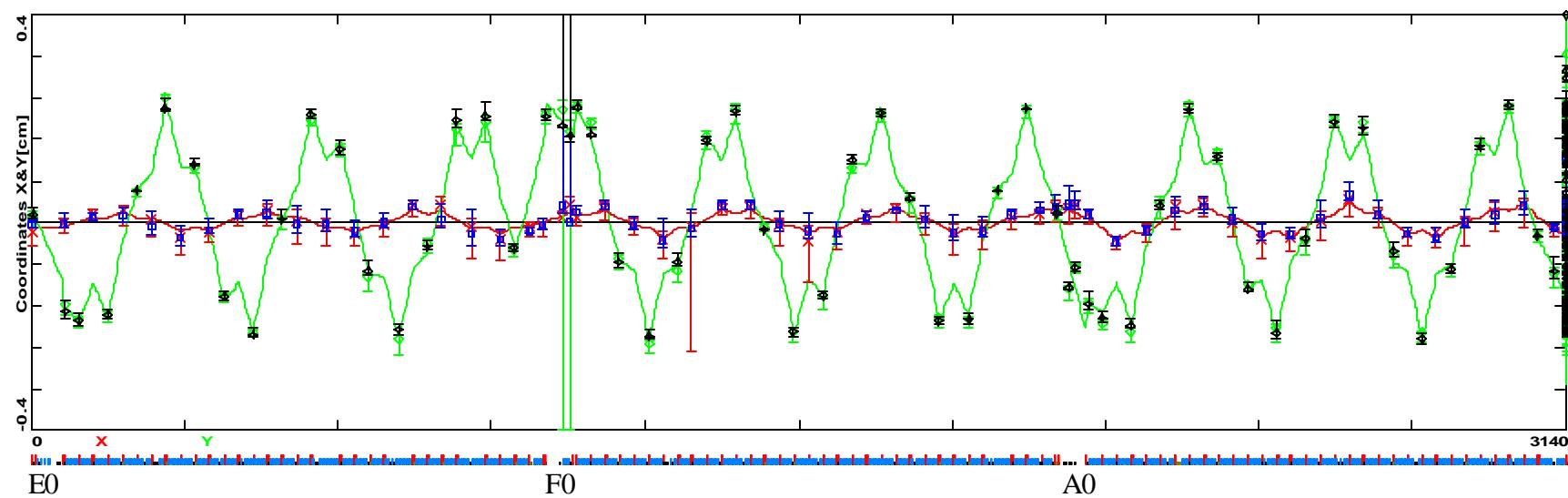


Wed Mar 12 09:41:24 2003 OptiM - MAIN: - D:\Optics\Tevatron\Tevatron\Aimin\TevI02.opt

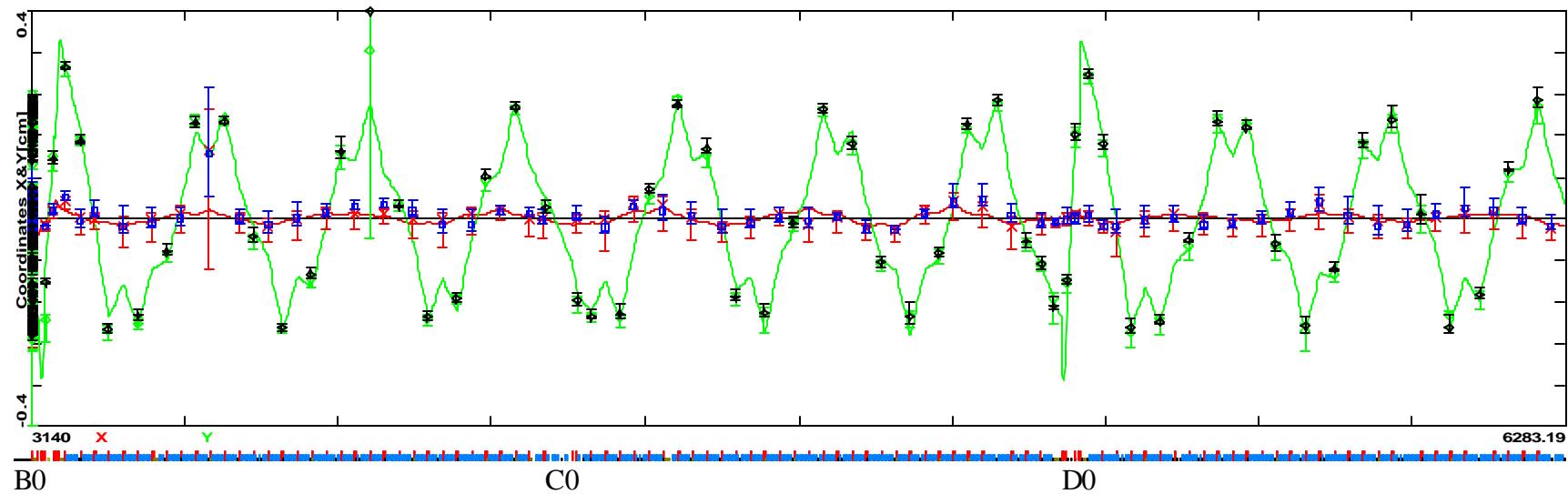


Y1: VE47 = 50 mrad

Wed Mar 12 09:42:27 2003 OptiM - MAIN: - D:\Optics\Tevatron\Tevatron\Aimin\TevI02.opt

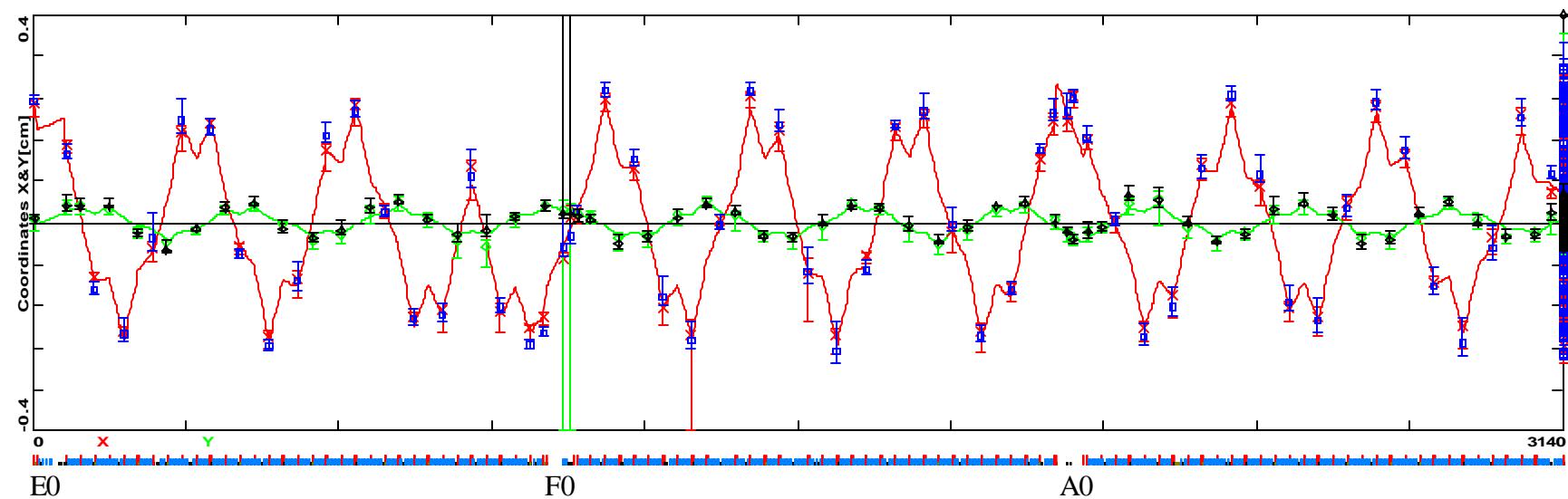


Wed Mar 12 09:42:59 2003 OptiM - MAIN: - D:\Optics\Tevatron\Tevatron\Aimin\TevI02.opt

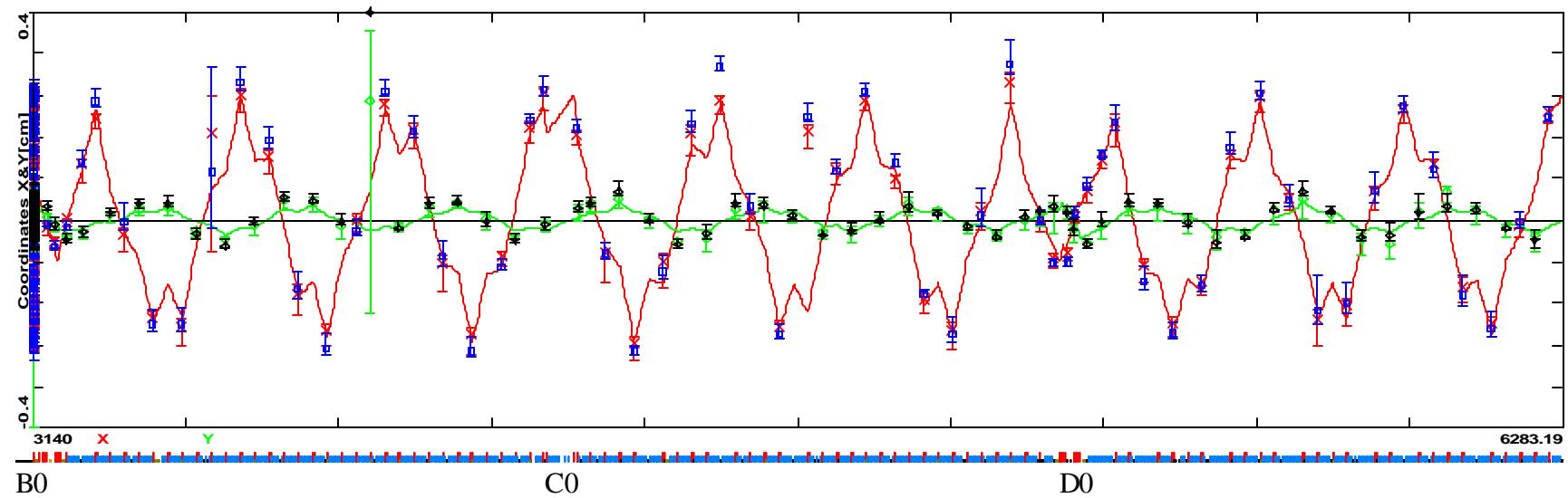


X2: HE44 = 50 mrad

Wed Mar 12 09:44:20 2003 OptiM - MAIN: - D:\Optics\Tevatron\Tevatron\Aimin\TevI02.opt

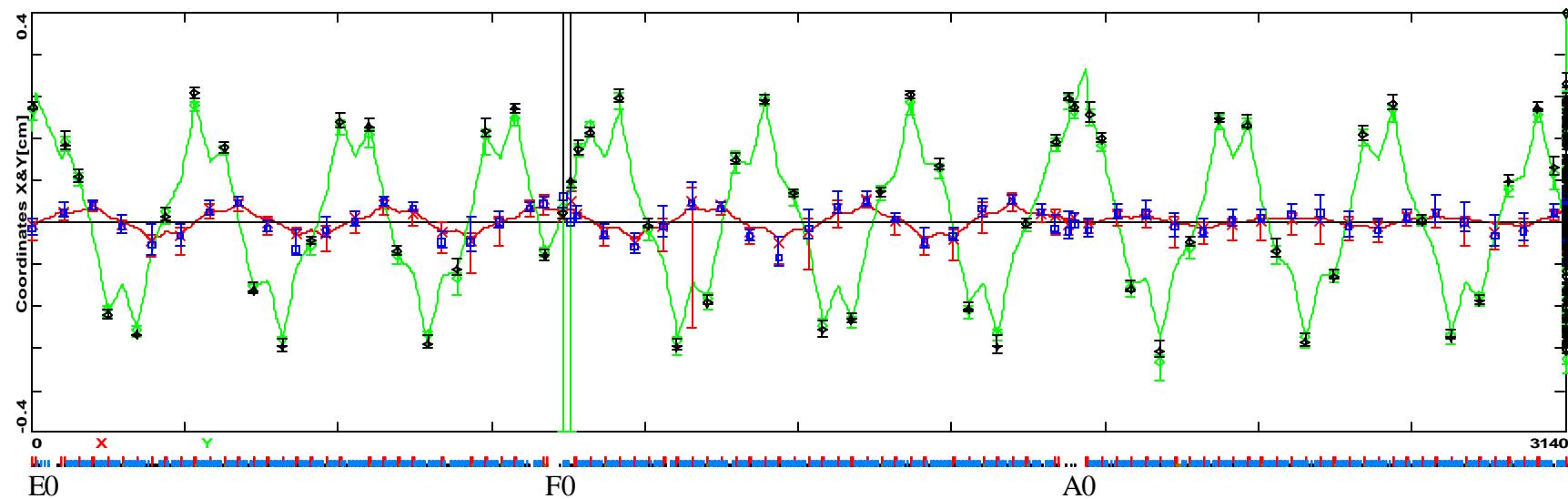


Wed Mar 12 09:44:48 2003 OptiM - MAIN: - D:\Optics\Tevatron\Tevatron\Aimin\TevI02.opt

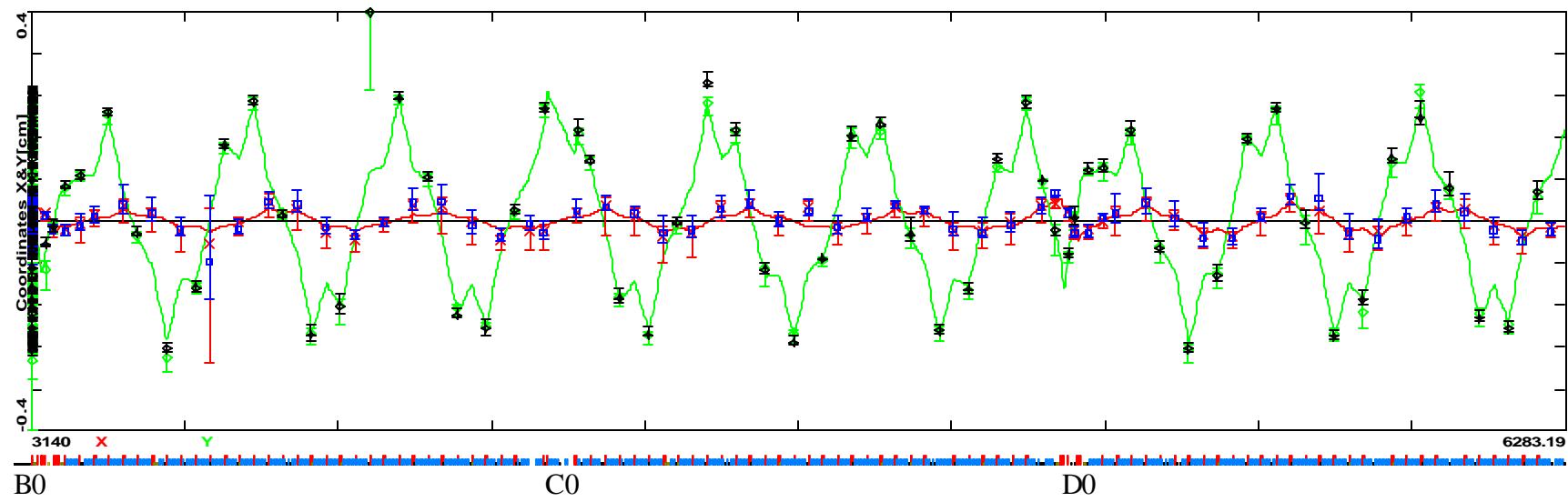


Y2: VE49 = 50 mrad

Wed Mar 12 09:46:00 2003 OptiM - MAIN: - D:\Optics\Tevatron\Tevatron\Aimin\TevI02.opt

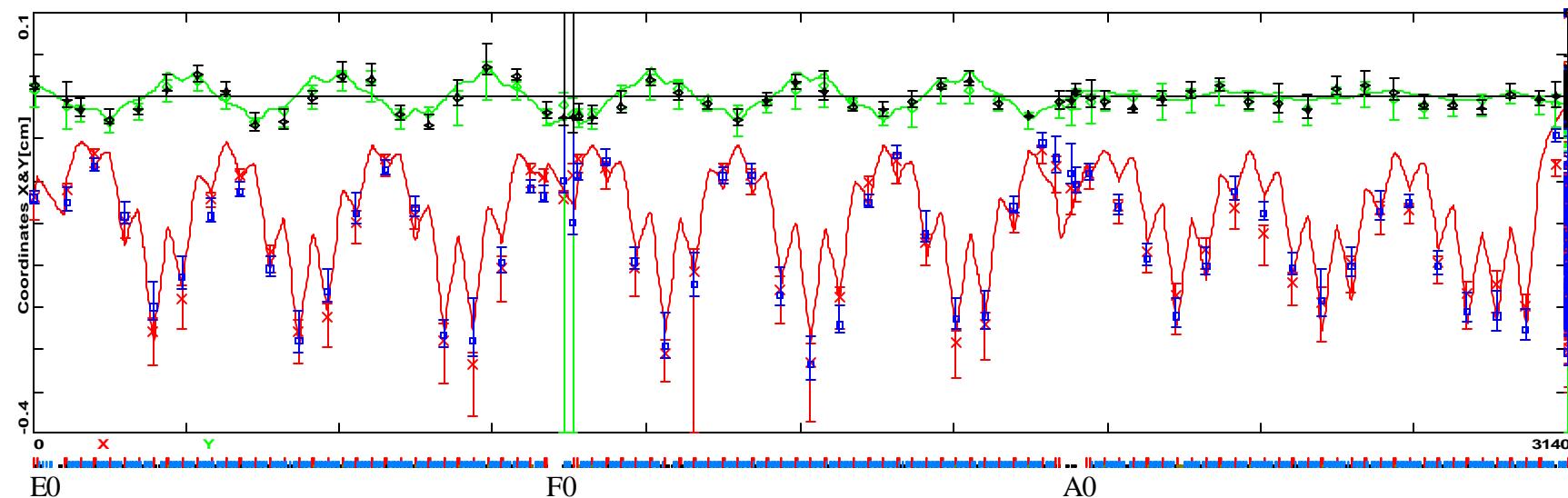


Wed Mar 12 09:46:24 2003 OptiM - MAIN: - D:\Optics\Tevatron\Tevatron\Aimin\TevI02.opt

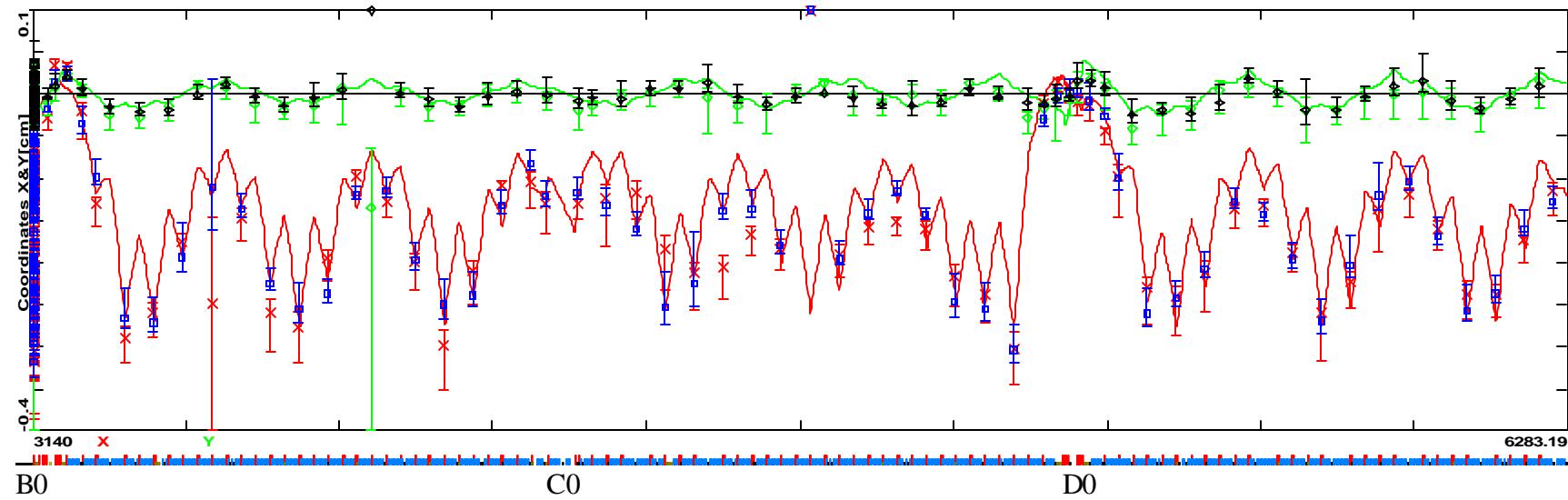


Energy: VFKNOB=80 Hz

Wed Mar 12 09:48:16 2003 OptiM - MAIN: - D:\Optics\Tevatron\Tevatron\Aimin\TevI02.opt

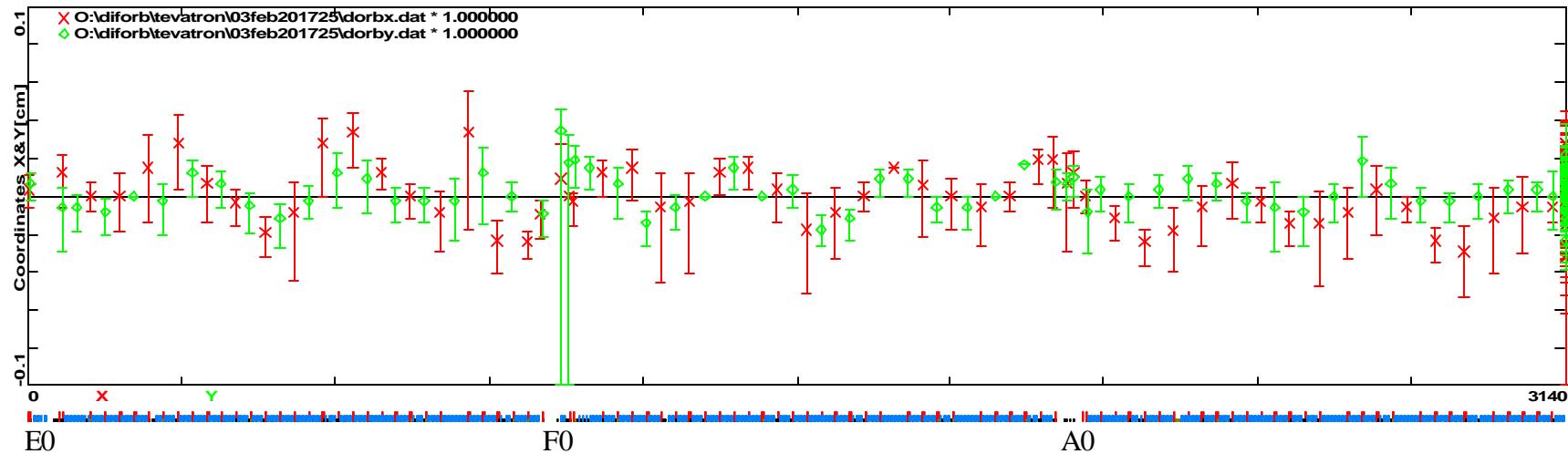


Wed Mar 12 09:48:39 2003 OptiM - MAIN: - D:\Optics\Tevatron\Tevatron\Aimin\TevI02.opt

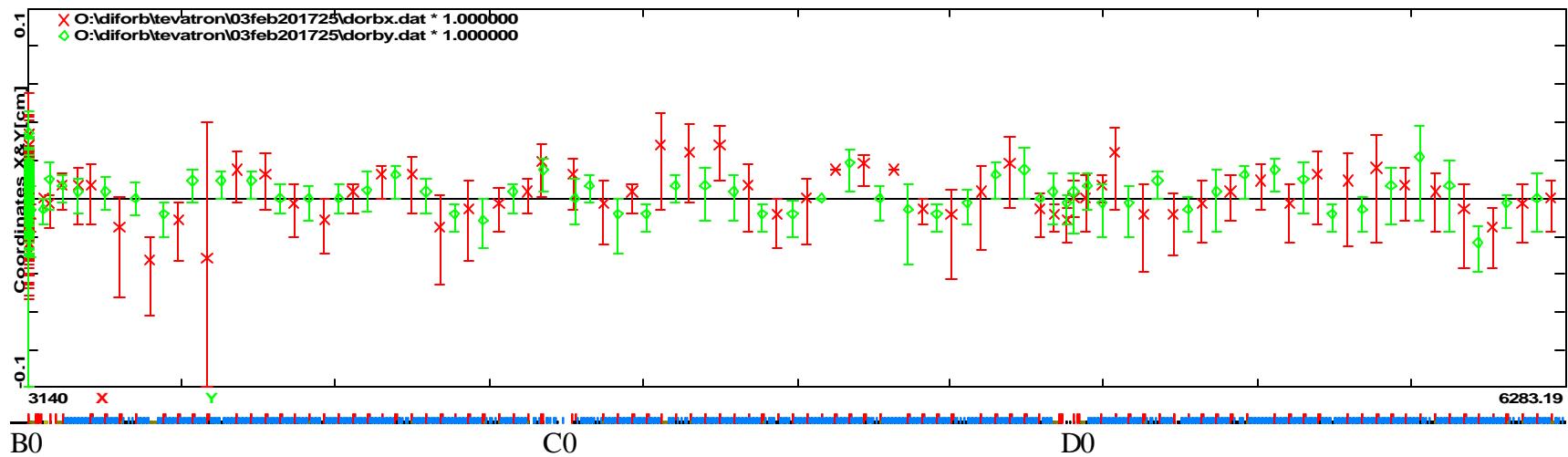


Reference orbit change

Wed Mar 12 13:54:04 2003 OptiM - MAIN: - D:\Optics\Tevatron\Tevatron\Aimin\Tevl02.opt

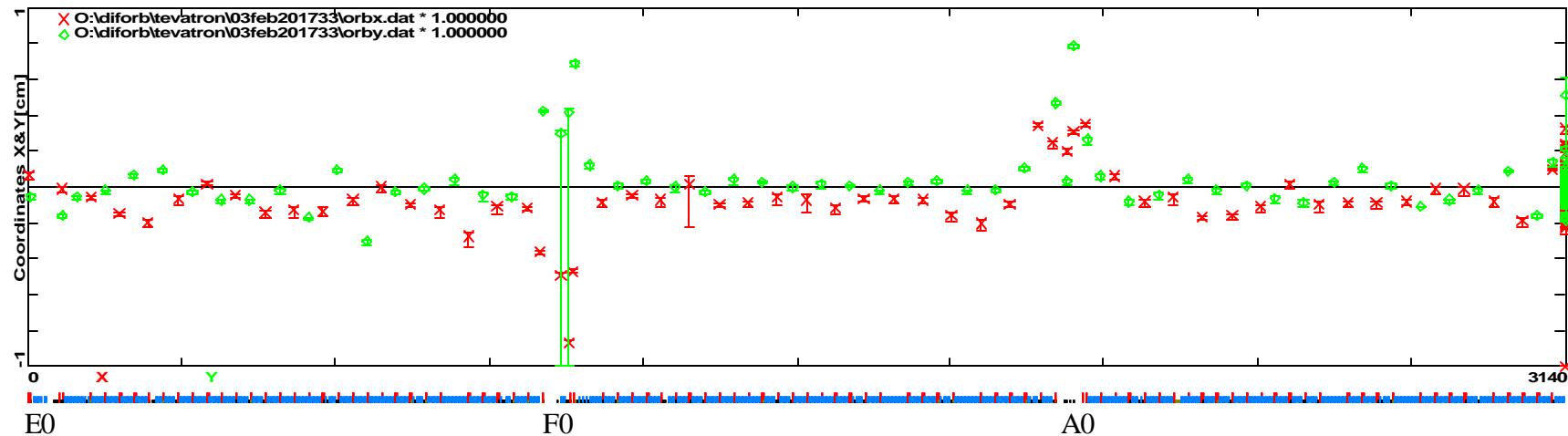


Wed Mar 12 13:55:04 2003 OptiM - MAIN: - D:\Optics\Tevatron\Tevatron\Aimin\Tevl02.opt

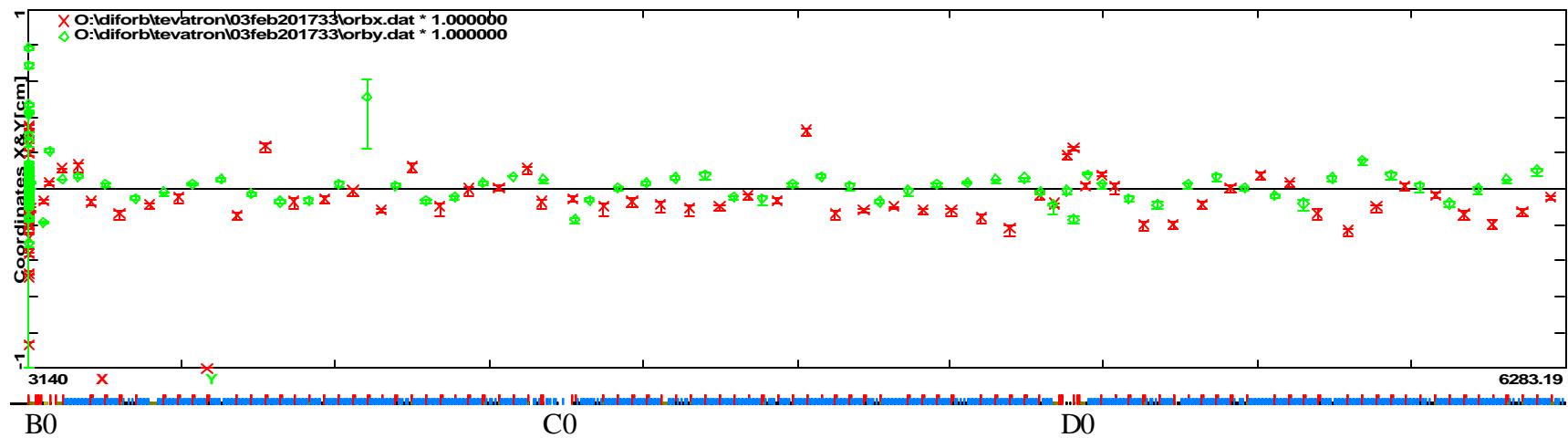


Absolute orbit

Wed Mar 12 13:51:48 2003 OptiM - MAIN: - D:\Optics\Tevatron\Tevatron\Aimin\Tevl02.opt

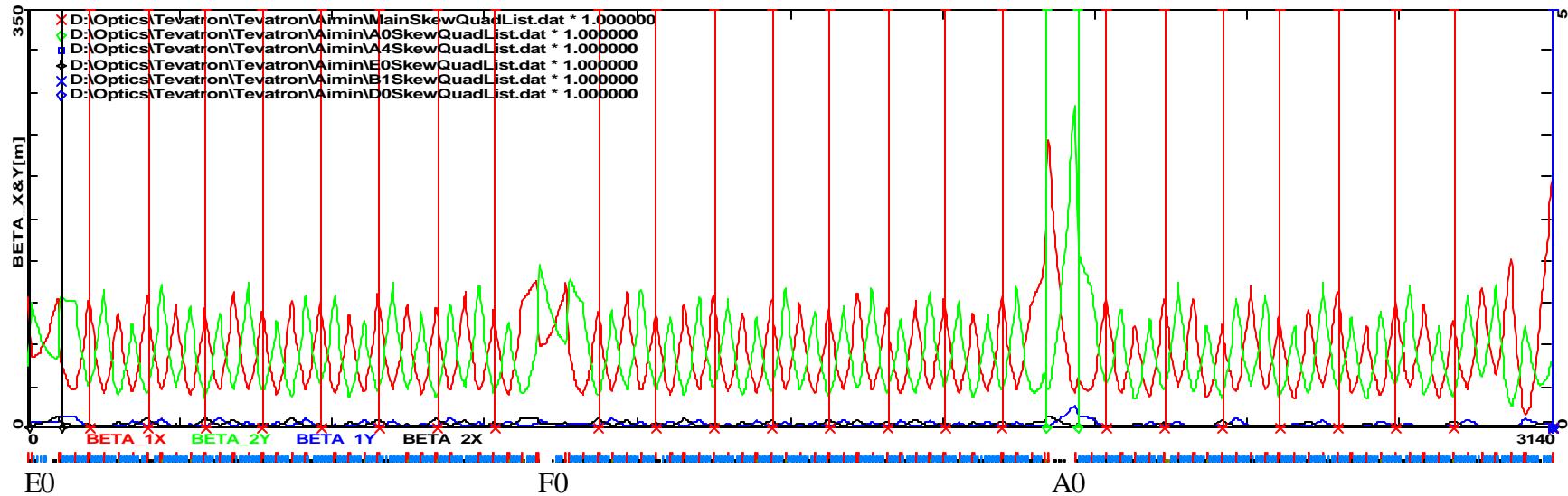


Wed Mar 12 13:52:12 2003 OptiM - MAIN: - D:\Optics\Tevatron\Tevatron\Aimin\Tevl02.opt

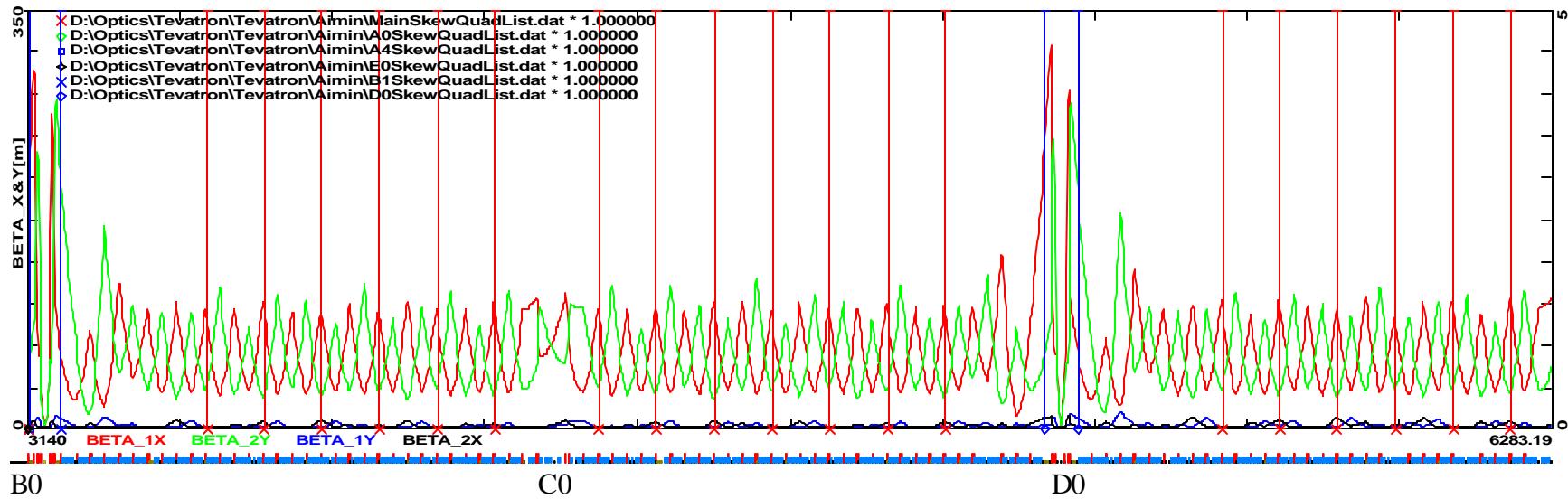


4D beta-functions and positions of skew-quads

Wed Mar 12 09:56:59 2003 OptiM - MAIN: - D:\Optics\Tevatron\Tevatron\Aimin\TevI02.opt

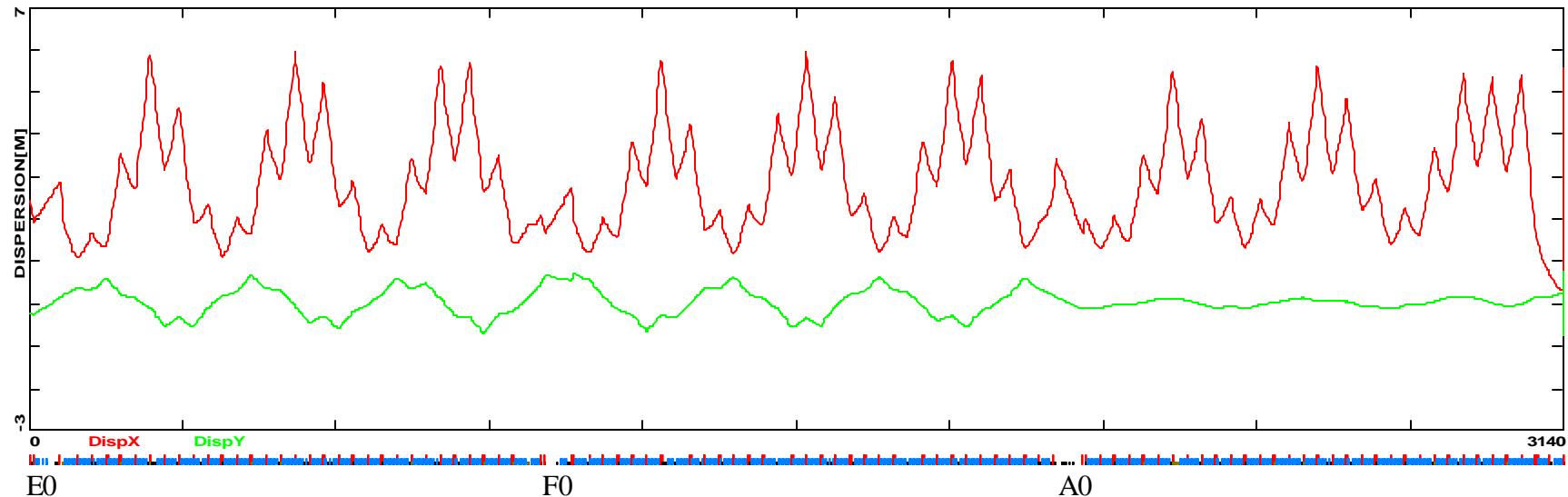


Wed Mar 12 09:57:27 2003 OptiM - MAIN: - D:\Optics\Tevatron\Tevatron\Aimin\TevI02.opt

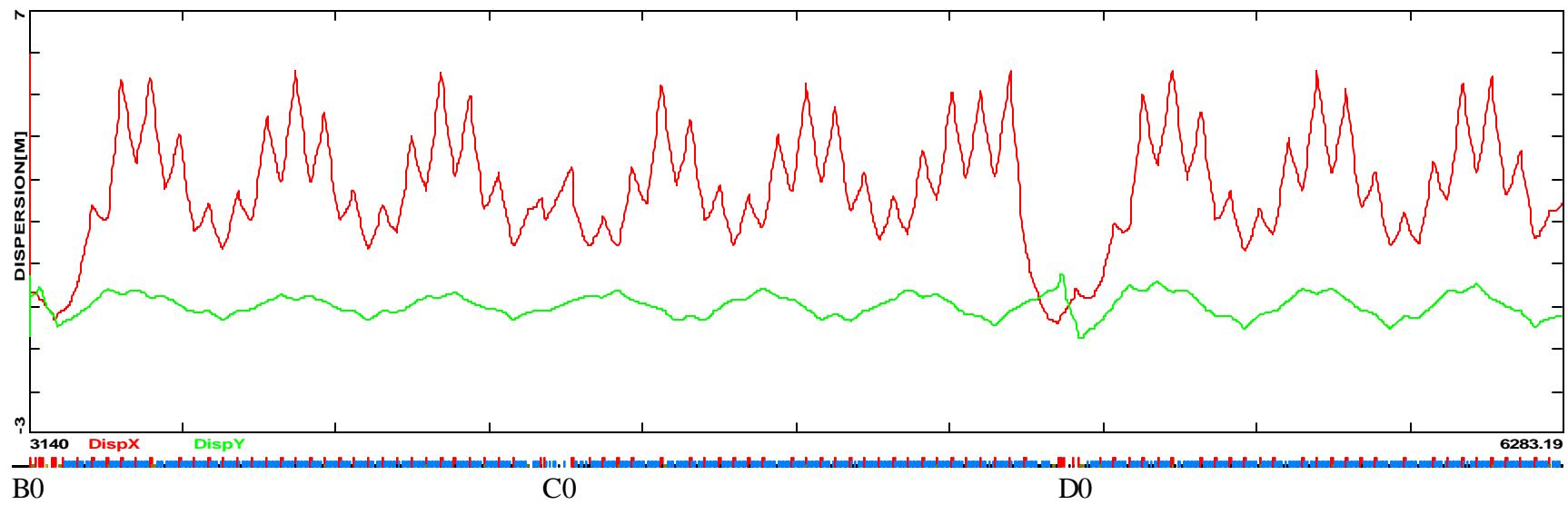


Dispersions

Wed Mar 12 13:37:36 2003 OptiM - MAIN: - D:\Optics\Tevatron\Tevatron\Aimin\TevI02.opt



Wed Mar 12 13:38:02 2003 OptiM - MAIN: - D:\Optics\Tevatron\Tevatron\Aimin\TevI02.opt



Fudge factors and rolls to fix linear optics

Global corrections

\$F_bendq = 2%; correction of dipole edge focusing
\$F_mq = 0.165%; correction of main bus quad focusing
\$F_Dskew = 1.44 units; skew quadrupole field of main dipoles

Point like corrections of quadrupole focusing

\$F_qA0U = 1%; related to beam displacement in A0
\$F_qC27 = -2%
\$F_CQ7= 20%; that corresponds to 4.4% correction for regular main bus quad
\$F_B0Q3F = 0.37%

\$F_D0Q3F = 0.6%;
\$F_D0Q2D = 1%;

Quad rolls

\$Qroll_A0U = 0.5 deg; related to beam displacement in A0
\$Qroll_B0Q7= -4 deg;

Lattice parameters at the beginning

4D beta-functions:

Beta_X_1[cm]=10842.2	Beta_X_2[cm]=305.195
Alfa_X_1=-0.262214	Alfa_X_2=-0.029194
Beta_Y_1[cm]=197.094	Beta_Y_2[cm]=5160.94
Alfa_Y_1=-0.0597818	Alfa_Y_2=-0.817864
Teta_1[deg]=-13.2192	Teta_2[deg]=-15.4477
U=-0.0404829	

Dispersions:

DispX[cm]=242.738	DispY[cm]=-23.2452
DispPrX=0.0220816	DispPrY=0.00227685

Tunes:

Qx=20.585062 Qy=20.575218

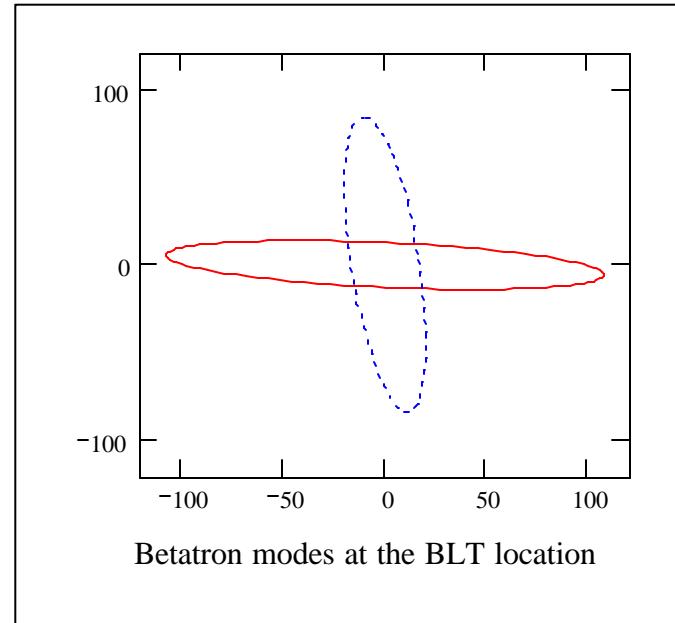
Momentum compaction = 0.00282631

Lattice parameters at important instrumentation locations

NAME	S[cm]	BetaX1	AlfaX1	BetaY1	AlfaY1	Teta1/2π	BetaX2	AlfaX2	BetaY2	AlfaY2	Teta2/2π	U	DspX	DspXp	DspY	DspYp
IHFWE11	6622.47	8285.57	4.4849	626.596	-0.32543	0.21276	619.839	0.321294	8016.48	-4.17565	0.23303	-0.04048	245.04	-0.142986	14.6812	0.01342
IVFWE11	6644.06	8093.11	4.42967	640.728	-0.32914	0.21341	606.044	0.317641	8197.87	-4.22552	0.233698	-0.04048	241.95	-0.142986	14.971	0.01342
IHFWE17	25737.65	7372.82	1.56948	311.591	-0.06683	0.36841	445.701	0.113992	4902.11	-1.31088	0.363953	-0.04486	487.85	-0.0994532	-25.8842	-0.01531
BLTH	110658.1	11521.3	-0.88462	200.135	0.00774	-0.31471	384.817	-0.01596	7027.18	0.232418	-0.338871	-0.04582	263.95	0.019882	52.197	-0.00272
BLTV	110792.1	11761.3	-0.90644	198.253	0.00630	-0.30789	389.204	-0.01678	6967.82	0.210531	-0.333158	-0.04582	266.61	0.019882	51.8316	-0.00272
PSYNC	426097.1	5378.62	0.903031	601.991	0.00333	0.214842	312.278	0.045203	10365.1	0.180615	0.214965	-0.02758	222.63	-0.04441	15.5498	0.002569

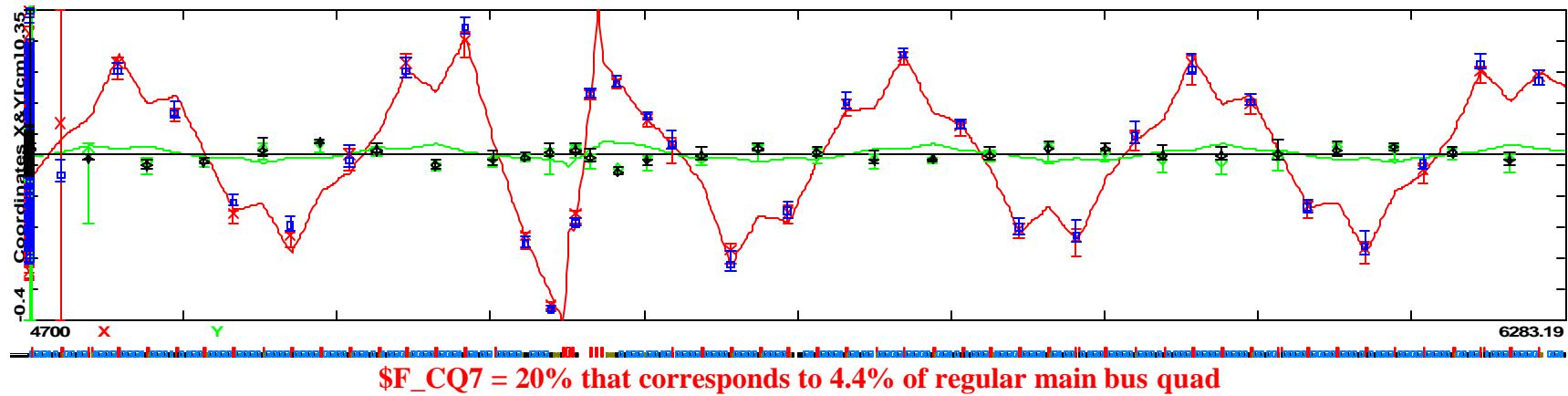
Skew quads

Name	setting	readback
T:SQF =	-2.888489;	-3.001563
T:SQA0F =	6.280518;	6.273438
T:SQA4F =	-5.172729;	-5.170312
T:SQB1F =	0.561523;	0.560938
T:SQD0F =	0.000000;	0.023438
T:SQE0F =	0.000000;	-0.001563

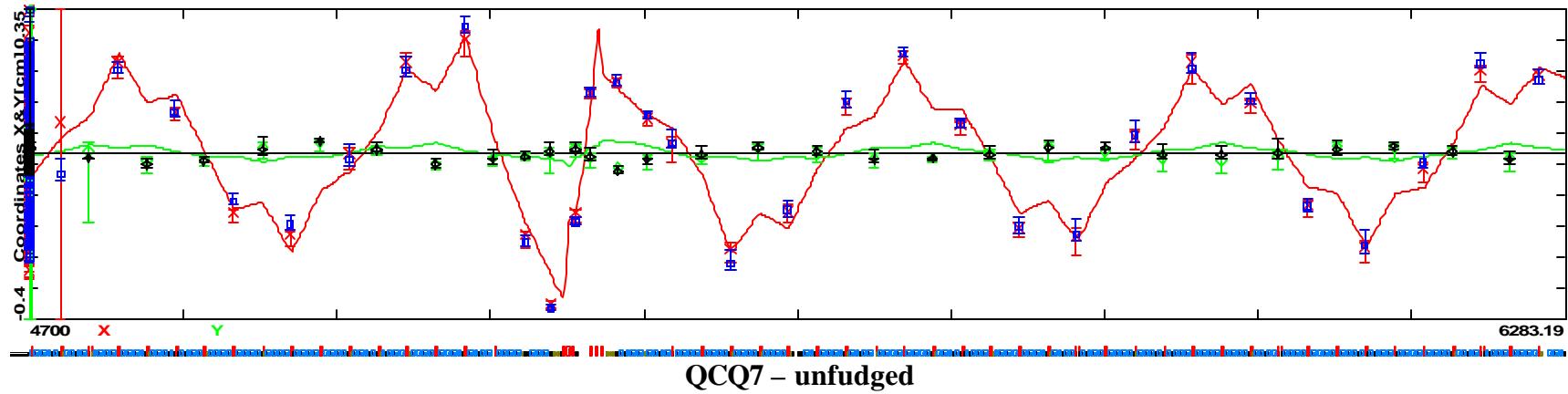


What quad fudging actually does?

Fri Mar 07 09:52:01 2003 OptiM - MAIN: - D:\Optics\Tevatron\Tevatron\Aimin\TevI02.opt



Fri Mar 07 09:51:33 2003 OptiM - MAIN: - D:\Optics\Tevatron\Tevatron\Aimin\TevI02.opt



Conclusions for BPMs

1. T:VPF0LU and T:VPF0LD are swapped
2. T:HPF0LU and T:HPF0LD are swapped
3. T:HPC28 has wrong polarity
4. T:HPB22 has large noise and incorrect differential position
5. T:VPC21 , T:HPC22 and T:HPC36 have large difference for positive and negative bumps. Probably there is large beam offset in BPM.